GAS JOURNAL

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MEETING GAS DEMAND

ONE of the most important problems confronting the gas industry to-day is that of meeting economically the demand for gas during peak-load periods—and we would underline the word 'economically.' Changed circumstances during the past 10 years—the greatly increased cost of coal and hence coke, the greatly increased cost or, indeed, non-availability of labour, the vastly greater cost of materials for gas-making plant construction, modification of home life due to the employment of women in both business and industrial spheres—have led to a demand for gas in excess of supply capacity. Nor will the clamant call prove ephemeral. The gas industry, of course, fully realises its duty to do all possible to satisfy public requirements. The problem, which is exercising the minds of all gas engineers, resolves itself into the best means to adopt to this end—in other words, that combination of gas-making plant which will yield the cheapest therm at the consumer's burner.

In 1933 we published in our columns a study of the financial benefits of carburetted water gas to the gas industry. It was an outstanding contribution by Humphreys and Glasgow which immediately commanded respect. It was concerned with the direct savings realised by the use of carburetted water gas for peak load service, and it aroused widespread interest. Two years later Dr. Arthur G. Glasgow gave a lecture to the Institution of Gas Engineers on the tactical use of carburetted water gas as a coal gas auxiliary in which he put forward a definite plan predetermined broadly by seasonal variations in the demand for gas. At the meeting of the Eastern Association of Gas Engineers and Managers last month Mr. H. S. Cheetham temporarily rounded-off the story in a most timely paper (last week's Journal, p. 448) in which he outlined the improvements and developments in plant design, discussed present-day costs of water gas and carburetted water gas manufacture, and considered the economics of the admixture of these gases with coal gas for town supply. Mr. Cheetham set out a comparison of the costs of manufacture of blue water gas and carburetted water gas of 500 B.Th.U. quality for 1938 and 1948, the costs being calculated on the basis of the use of an automatic plant embodying automatic coke charging, self-clinkering generator with annular boiler, waste heat boiler, and electric motor-driven blowers. Allowance has been made for deterioration of coke quality, which reduces plant capacity and increases coke consumption per unit of gas made. Changed costs of materials have been taken into account. The overall conclusion reached is that the 10 year period has brought about an increase in total cost of manufacture of blue water gas (excluding capital charges) of 180%—this despite improvements in the efficiency of gasification. In regard to carburetted water gas the corresponding figure is 126%. Looked at from another angle, whereas in 1938 carburetted water gas cost 40% more per therm than blue water gas, last year the difference in manufacturing costs was only 13%. In the 1933 contribution to which we referred at the beginning of this note two of the conclusions reached were: (1) That, including capital charges, the cost of peak load coal gas (20% of the annual output being considered as peak load) was approximately twice the cost of base load coal gas; and (2) that, including capital charges, peak load carburetted water gas cost 3-5ths of the cost of peak coal gas. The costs of gas manufacture given in that contribution do not, of course, hold to-day. The advantages of the use of carburetted water gas as a coal gas auxiliary, however, are available to an even greater extent in present circumstances.

Nor is it the intention of Humphreys and Glasgow to rest contented with past achievement or current practice. Achievement has been great. The earliest water gas installation constructed by the firm was at Liverpool in 1893. Since that time the firm has constructed or has in course of construction more than 1,350 plants with a daily capacity exceeding 2,100 mill. cu.ft. As for developments, the use of preheated blast and preheated steam is about to be investigated by the Gas Research Board, an experimental plant having been provided for this purpose by the firm. The substitution of wax distillate for gas oil has recently been tried out successfully. We commented on the possibilities in this direction in the Journal of August 11 last. And only last week (p. 458) we brought up to date the information on the supply to the Partington Gasworks, Manchester, of 'tail' gas from the oil cracking plant of Petrochemicals, Ltd.

The calorific value of this gas at present is 1,450 to 1,500 B.Th.U. cu.ft., but by successive stages will finally reach about 890 B.Th.U. This refinery gas, which is at the moment being diluted with producer gas, will ultimately be used for the enrichment of water gas. A Humphreys and Glasgow plant is nearing completion and is being so arranged that it can be used also for the thermal cracking of the tail gas by the reforming process. Mr. Cheetham's paper is once again a pointer to the flexibility of the gas-making process.

ECONOMY AND EFFICIENCY

A TIMELY review of the problems which are occupying the minds of gas engineers in these early days of nationalisation was given by Mr. H. H. Brown, Manager of the Exeter and District Sub-Division, in his paper on 'Economy and Efficiency in Relation to Present Problems in the Gas Industry' to the Southern Association last week. The breaking down of parochial boundaries and the transfer of control from over 1,000 companies and committees to a dozen area Boards opens the door to a new approach to the question of integration, but the new set-up does not of itself impart any new magic to those very much overworked words 'economy' and 'efficiency.' There must in due time be a

great deal of physical integration—the actual linking up of surrounding small districts with central manufacturing plants and the consequent closing down of small and inefficient works—but the enormous capital cost of carrying out the work as well as the running costs of pumping, &c., must be weighed against the possibilities of making some of the smaller works more efficient in themselves and enabling them to cope with peak demands without outside aid. In these days when it costs from three to four times as much to install new plant as it did to put in the original plant of the same capacity there would appear to be little prospect of 'economy' in the sense of avoiding imposing increased charges on the consumer. With the great resources at the disposal of the area Boards, however, there is a better chance of evolving some equitable system of subsidies whereby a more uniform level of gas charges may be established, though this, as Mr. Brown points out, is likely to be more difficult owing to the tendency towards increasing the price of the better types of gas coals which from the national economic angle should travel the longest distance because of the lower proportion of inerts to be transported.

In regard to this quest for uniformity, Mr. J. H. Dyde, Deputy Chairman of the Eastern Gas Board, passed on to the meeting in the course of the discussion a novel thought expressed by Sir John Stephenson, the Chairman of the same Board. Why, he asked, does not the gas industry look upon coal from an industry point of view, and not from the point of view of a particular works situated in a particular part of the country. A common price for coal to all works, varying only according to the characteristics of the coal supplied, would mean a general balancing of shipping and transport costs and go far towards unifying the costs of gas throughout the country. In pre-nationalisation days we should have been told that it just cannot be done; is it possible now? It is quite true that nothing but satisfaction can result from further improving the efficiency and particularly the economy of operation of production and utilisation of gas, and it may well be that the gas industry, after recovering from the war-time lag in new capital and maintenance expenditure, will be able to point the correct approach to solving the stubborn problem of establishing a real national fuel policy.

DISTRICT SECTIONS

ONLY a few of the District Associations have so far expressed corporately any opinion on the proposal to convert them into District Sections of the Institution of Gas Engineers. The idea originated in the Southern Association two or three years ago, and last week the members expressed themselves unanimously in favour of the step and empowered a small sub-committee to act on their behalf in implementing the terms and conditions under which the change is to be effected. The Eastern Association a few days earlier also voted unanimously in favour of the suggestion, and up to now we have not heard any contrary view expressed. The Institution has been careful not to exert any pressure, and the Districts have been cautious in insisting that they must be satisfied with the terms and conditions before they commit themselves. The statement which Mr. L. P. Ingram made to the Southern Association last week should serve to remove any doubts that may have persisted in the minds of the other Associations, particularly those with a strong 'trading' membership.

Briefly it has been agreed that everybody who is already a member of a District Association will, in the first instance, be accepted for some form of membership of the Institution, but afterwards admission will become more selective and will be achieved through the ordinary channels. Membership of District bodies will be confined to members of the Institution and there will be no direct admission to the Districts. 'Automatic' membership of a District body will be confined to the District in which the candidate normally resides, and 'contracting' members seeking admission away from home will be accepted only by ballot. Finance has been another difficulty, but it has now been agreed to leave financial matters as they are, with the sole proviso that alterations in District subscriptions shall be subject to the approval of the Council of the Institution. Each Section will elect its own Management Committee and will be free to run its own affairs practically autonomously, as at present. The four District meetings already held since vesting date confirm the hope that so far as the area Boards are concerned, such activities will not be interrupted.

MORE COAL DISCOVERED

Last week a new seam of coal, nearly 6 ft. thick, known as the Low Main, was reached at a depth of 900 yd. during the sinking of a new shaft at Clipstone Colliery, Mansfield. The mineral wealth of the seam has been described as 'almost limitless.' The colliery is in the West Midlands division of the National Coal Board, and the two other areas of rich coal which were recently discovered are also in the same division of the N.C.B.

GAS SALES IN AUSTRALASIA

Compiled and issued by the Statistical Department of the National Gas Association of Australia, the *Statistical Year Book* of the Gas Industry in Australia and New Zealand, 1947, just to hand shows that gas sales in Australia for 1947 reached an estimated total of 30,600 mill. cu.ft., exceeding sales for 1946 by 5.3% and for 1939 by 61.3%. The total number of meters in commission at the end of 1947 was approximately 1,092,000, against 1,065,000 in 1946 and 903,000 in 1939. Sales of coke, totalling 695,000 tons, were 6.5% above the 1946 figure, and 52.5% above that for 1939. Tar sold or treated, estimated at 29,900,000 tons, was slightly below the figure for 1946, but was 58% above 1939 consumption. Coal carbonised at 1,907,000 tons was 5.2% above the quantity carbonised in 1946 and 58% more than in 1939. The average number of persons employed in Australian undertakings during the year was 10,800, 490 more than in 1946, and 1,140 more than in 1939. The total make of gas in New Zealand during 1939 increased by 3.7% over the previous year to 4,800 mill. cu.ft., and was 32.2% higher than in 1939. Statistics for the year were supplied by all the undertakings in the Australian metropolitan area and by 63 provincial undertakings which represented 86% of the total gas made in provincial areas. Eighteen undertakings, representing 83% of the total make in New Zealand, also supplied statistics for the handbook.

STATE-AIDED RESEARCH

The importance of fundamental research was stressed by Sir Edward Appleton, who recently relinquished his post as Secretary of the Department of Scientific and Industrial Research, in the Annual May Lecture last Wednesday of the Institute of Metals. 'Industrial research,' he said, 'draws upon the reserves of scientific knowledge gained by the worker in pure science.' and it is his opinion that it is the first duty of a nation which intends to develop science as an aid to industrial progress to foster to the utmost fundamental research at the universities. It is from ideas suggested by such work that the really great and revolutionary industrial advances spring. He added: 'I believe that the greatest scientific advances have come, in recent years at any rate, from small teams working under the influence and inspiration of a leader with ideas.' In this year's estimates provision for grants to individual workers and for the allied service of training of young research workers is over £700,000, as against £26,000 in the year before the war. It is perhaps not widely known that State-aided research trainees need not necessarily work at a university. Grants may be given by the D.S.I.R. for training in applied science, in the methods of industrial research, and even for courses in technology; and the awards may be held not only at universities but also at technical colleges, D.S.I.R. establishments, Research Associations, and, in fact any research laboratory or institution approved by the Advisory Council.

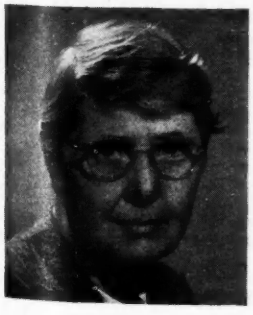
MR. GAITSKELL ON NATIONALISATION

The trade union conferences of the past week have brought to the surface some of the undercurrents that are now running through the labour movement. They have been to a remarkable degree critical of the Government. Everywhere the emphasis has been on wage increases; the Government's attempt to check them has been strongly attacked, and even the T.U.C.'s hesitant approval

of the Government's policy has come under fire. Significant and indicative of the present feeling, the Railway Clerks' Association, and the Electrical Trades' Union conference at Worthing assailed the composition of the Boards of management of all nationalised industries. Two resolutions were passed by the railway clerks. First, they condemned the present 'method of apprenticeship and graduate appointments in the railway service,' and called for its immediate replacement by educational and training facilities which would give every opportunity for staffs to rise from the lowest grades to the highest administrative positions. Secondly, they viewed with concern the present methods of promotion and selection in the road transport industry. The Electrical Trades' Union clashed with the Minister of Fuel and Power when they passed unanimously a composite motion from the Executive calling for 'greater and direct trade union representation on all nationalised industry boards at all levels,' and demanded that 'shop stewards committees, workers committees, and production committees be set up forthwith in all nationalised industries.' Mr. Gaitskell attacked this resolution. He stated that the Labour Party had never held the view that to have direct representation on the boards of workers in the industry was an appropriate form of organisation. 'If you made the workers' representatives full-time members of the board,' he said, 'they would cease to be representative of the workers. They would be doing a managerial job, and, as such, could not be workers representatives." One result of nationalisation, he asserted, would be the broadening of avenues of promotion, but there were also other considerations. 'As a Minister I have to have regard for the public's view,' he said. The general election, he maintained, in which nationalisation would be one of the issues, would be judged by the people —the floating voters—and not entirely on whether it had benefited the workers in the industry.

Personal

Mr. PERCY T. G. WILKINS, who has been London Manager of Fletcher, Russell and Co., Ltd. (Radiation, Ltd.), since 1936, retired on May 31 after 46 years' service. 'Wilkie,' as he was affectionately known to his many friends in the industry, was one of the early pioneers in promoting the use of gas for industrial purposes, serving as one of the first specialists of industrial appliances as London Representative before the first war.



Miss ELLINGTON WRIGHT, M.B.E., who has just been appointed Chairman of the Women's Gas Council, was educated abroad and at Oxford and London Universities (Modern Languages and Economics). In 1919 she was sent out by the Foreign Office as first woman with rank of Officer to the British Section of the Inter-Allied Rhineland High Commission, and returned to England in 1922 where she was for a time leader writer on Franco-German questions in the *Nation* and *Athenæum*. In 1926 she became Assistant to the Director of the Intelligence Department, I.C.I., and in that capacity was Assistant Editor of the I.C.I. *Monthly Bulletin*, 1926-31. She entered the service of the Gas Light and Coke Company in 1931, and on the formation of the Women's Gas Council in 1935 was made responsible for Women's Gas Council matters in the area of the Gas Light and Coke Company, and was actively concerned in organising the Southend and West Ham branches. Miss Wright has been a member of the National Executive Committee since the foundation of the Women's Gas Council; and was elected Vice-Chairman in succession to Miss Williams. At the beginning of 1944 she was seconded by the Gas Light and Coke Company to the Ministry of Economic Warfare; in October, 1944, to the Foreign Office; and in 1946 returned to the company.

Obituary

Mr. J. D. SMITH, M.I.C.E., J.P., former Engineer, Manager, and Secretary of the Belfast Corporation Gas Department, died suddenly on May 26 after attending the Freedom ceremony in Belfast. He was 77 years of age. Born at Hawick, Scotland, Mr. Smith served his apprenticeship there as a mechanical engineer, and became assistant and later successor to his father as Engineer and Manager of the Hawick Gas Company. In 1893 he went to Selkirk as Manager, and in 1897 he was appointed Engineer and Manager to Stirling Gas Company. He left Stirling in 1910 to take up his position at Belfast. When he first took up duty at Belfast the undertaking was in a transitional stage. New plant and new methods were required, and under his leadership a complete reorganisation was effected. His technical ability led to the adoption of, at that time, the bold policy of installing four vertical retorts, which permitted the retention of a site which had hitherto been deemed insufficient for the city's needs; his tireless industry is indicated by the growth of the undertaking's make, from 2,236 mill. cu.ft. per annum in 1910 to 4,177 mill. cu.ft., in 1940 prior to his retirement. His devotion to the industry was recognised at an early date; he was President of the North British Association of Gas Managers, 1908-9, President of the Institution of Gas Engineers, 1922-23, President of the Irish Association of Gas Managers, 1925, and President of the Waverley Association, 1930. No more fitting tribute could be paid to him than that which was made on the occasion of his Presidency of the I.G.E., when for the first time in its long history the Institution held its meeting in Belfast. 'Reserved in speech, the President has been a hard worker, and a worthy counsellor, in all matters appertaining to the general interests of the great industry with which he has had so long and intimate an association. His official work, too, has shown him to be a leader of great ability, in both the engineering and commercial affairs of the undertakings with the interests of which he has been identified. Beyond all this the abundant geniality which has ever characterised the President has endeared him to his colleagues in the profession.'

Appointments

Northern Gas Board

The Northern Gas Board has announced the following appointments within the Middlesbrough Division:—

STANLEY JONES, Engineer and Manager, Western Section, comprising Middlesbrough and South Bank undertakings. In addition, Mr. Jones will act as Deputy to the Divisional General Manager in his absence.

H. P. ALLISON, Engineer and Manager, Eastern Section, comprising Redcar, Cleveland, and Guisborough undertakings.

North Eastern Gas Board

The following additional appointments have been made by the North Eastern Gas Board:—

Group General Manager, Wakefield Group: J. M. MACLUSKY (formerly Director, Engineer, and Manager, Calverley and Horsforth District Gas Undertaking).

Grid General Manager: L. W. ROBERTS (formerly Engineer, and Manager, West Yorkshire Gas Distribution Company).

East Midlands Gas Board

The East Midlands Gas Board has announced the following appointments. In the list given below former positions are shown in brackets.

Public Relations Officer: WILLIAM R. OLIVER (P.R.O. Sheffield & District Gas Company).

Engineering Assistant: D. W. AULT (Wandsworth & District Gas Company).

Engineer, Sheffield & Rotherham Division: F. G. PYPER (Deputy Engineer (Construction) Sheffield & District Gas Company).

Mains Engineer, Sheffield & Rotherham Division: H. FIRTH (Mains Superintendent, Sheffield & District Gas Company).

Coke Oven Gas Officer, Sheffield & Rotherham Division: L. HURST (Chief Technical Officer, Sheffield & District Gas Company).

Administrative Assistant, Sheffield & Rotherham Division: W. E. BRAITHWAITE (Cost Accountant, Sheffield & District Gas Company).

Personnel Officer, Sheffield & Rotherham Division: A. W. FIELD (Secretary, Sheffield & District Gas Company).

Transport Officer, Sheffield & Rotherham Division: W. WOODCOCK (Transport Officer, Sheffield & District Gas Company).

Administrative Assistant, Notts. & Derby Division: C. H. MOSEDALE (Secretary, Derby Gas Light & Coke Company).

Administrative Assistant, Leicester & Northants Division: W. L. BRAY (Secretary, City of Leicester Gas Department).

Manager, City of Leicester Sub-Division: W. A. PASK (Deputy Engineer and Manager, City of Leicester Gas Department).
Manager, Northampton Sub-Division: C. C. WOOD (Manager, Wellingborough Gas Undertaking).
Manager, Leicestershire & Rutland Sub-Division: J. CORRIGAN (Manager, Loughborough Gas Undertaking).
Manager, Derby Sub-Division: A. FACER (Engineer and Manager, Hereford Gas Undertaking).
Engineer, Leicester & Northants Division: J. F. FOX-ANDREWS (Assistant Engineer, Lea Bridge District Gas Undertaking).
Engineer Notts. & Derby Division: A. W. ELLIOTT (Chief Engineer, Derby Gas Light & Coke Company).

1949 *JOURNAL* DIRECTORY

In order to keep the Directory information up to date, the following alterations which have been notified during the past month should be noted in the 1949 issue of the *Gas Journal Directory:*

Page 8.—ASHTON-IN-MAKERFIELD: Delete J. A. Gray, *E & M*, retired.
„ 14.—BRIDGEND: W. F. Edwards, *M & S*, becomes *GM & S*. W. D. Rees, *E*.
„ 28.—DURHAM: J. C. Morley, *S*, vice A. S. Middleton.
„ 44.—LINCOLN: Delete G. Wright, *E & M*, retired.
„ 58.—PORT TALBOT: W. F. Edwards, *GM & S*. W. D. Rees, *Actg E & M*, becomes *E*.
„ 66.—SHEFFIELD: Delete R. Halkett, *GM & CE*.
„ 70.—STOCKTON-ON-TEES: G. W. Perks, *E & M*, vice F. L. Scaife.
„ 84.—YORK, HARROGATE GROUP: Delete A. McDonald, *GM*, and F. W. Allum, *S & Asst GM*.
„ 92.—HELENSBURGH: A. McFadyen, *E & M*.
„ 164.—GAS RESEARCH BOARD: A. J. Penston, *Secretary*, vice W. T. K. Braunholtz.
„ 168.—MANCHESTER DISTRICT ASSOCIATION OF GAS ENGINEERS.—A. H. Nicholson (Colne), *Hon. Secretary and Treasurer* (vice T. Haworth).
„ 293.—BUYERS' GUIDE.—Under 'Bakers' Ovens' delete Perl Controls, Ltd.

Alterations and additions to the *Gas Board Personnel Supplement*, too numerous to list here, have been published during the past month on pages 213, 272, 275, 276, 331, 332, 338, and 438 of the *Journal*.

VISIT OF FRENCH HIGHWAY EXPERTS

A delegation of nine French highway engineers visited London from May 23-25 to inspect plants, laboratories, and sites connected with the use of tar in the construction and maintenance of roads. The party consists of MM. Boutet (Vice-President of the Council General of the Department of Highways and Bridges, Paris), Cadenat (Engineer in Chief, Department of Bridges and Highways, Nantes), Clamer (Commercial Director of E.A.C., Paris), Cochery (President of the National Syndicate of French Importers of Coal Tar), Coret (President of Atiged), Duriez (Director of the Technical Laboratory, National School of Bridges and Highways), Jeandat (Assistant Director of Public Works, Morocco), Leroux (Engineer in Chief, Department of Bridges and Highways, Chartres), and Rumpler (Director of Roads, Ministry of Public Works).

Their tour in this country included a trip to the Products Works of the North Thames Gas Board at Beckton and inspection of road tar spraying in progress in the London district. They also visited the Road Research Laboratory of the Department of Scientific and Industrial Research at Harmondsworth, the slag macadam plant of Crow, Catchpole and Co., Ltd., at Hayes, the Amalgamated Roadstone Corporation's macadam plant at West Greenwich, and the Hog's Back, near Guildford, where the 'rougous tar carpet' is reputed to be the safest and most economical road surface yet produced.

On May 24, the party was entertained at dinner at the Dorchester Hotel by the British Road Tar Association, the chair being taken by Col. H. C. Smith, C.B.E., D.L., J.P., the President of the Association, and Deputy Chairman of the Gas Council. Those present at the dinner included Major H. E. Aldington, C.B., Chief Engineer of the Roads Department of the Ministry of Transport, Dr. W. H. Glanville, C.B.E., Director of the Road Research Laboratory, and other prominent figures from gas, road tar, and highway circles.

Mr. F. M. Birks, C.B.E., Deputy Chairman, North Thames Gas Board, Dr. E. V. Evans, O.B.E., Chairman, London and Counties Road Tar Association, M. Duriez, Director of the Technical Laboratory, National School of Bridges and Highways, Paris, Mr. W. K. Hutchison, Chairman, South Eastern Gas Board, Mr. H. H. Bates, South Western Tar Distilleries, Ltd., and M. Cadenat, Engineer-in-Chief, Department of Bridges and Highways, Department de la Loire Inferieure, Nantes, at the dinner given by the British Road Tar Association to visiting French highway experts.

On the occasion of the handing over of the Coventry gas undertaking to the West Midlands Gas Board illuminated addresses were presented to Alderman J. Howat, Chairman of the retiring Gas Committee, and Mr. J. E. Wakeford, Engineer and Manager, who has now become Divisional Manager for the Birmingham Division. The presentation was made by the Mayor of Coventry, Councillor W. H. Malcolm, and the addresses were a mark of esteem from the Corporation for services rendered. The photograph shows left to right: Mr. Wakeford, Alderman Howat, Mr. S. H. Barnett (Coventry's display artist responsible for the preparation of the addresses), and the Mayor of Coventry.

Diary

June 2.—**Solid Smokeless Fuels Federation:** Executive Committee Meeting. The Dorchester, Park Lane, W.1, 11.30 a.m.
June 2-3.—**Home Service Business Conference:** Gas Industry House.
June 10.—**London and Southern Junior Gas Association:** Annual General Meeting.
June 11.—**London and Southern Junior Gas Association:** Summer Visit to Southampton.
June 13-14.—**Institution of Gas Engineers:** 86th Annual General Meeting, Institution of Civil Engineers, Great George Street, London, S.W. 1. (For full programme see *Journal* of May 11, p. 331.)
June 15-20.—**International Gas Union:** Fourth International Gas Conference, Institution of Civil Engineers, Great George Street, London, S.W. 1. (For full programme see *Journal* of April 6, p. 45.)
June 18.—**Scottish Junior Gas Association (Eastern District):** Annual Outing.
June 22.—**Manchester District Junior Association of Gas Engineers:** Ladies Day. Visit to works of Southport Gas Department.
June 24.—**Northern Junior Gas Association:** Annual General Meeting, Seaburn Hotel, Sunderland.
June 24.—**Waverley Association of Gas Managers:** Annual Meeting, Y.M.C.A. Hall, Edinburgh, 10.15 a.m.
June 25.—**Wales Junior Gas Association:** Summer Meeting.
June 28.—**Southern Association of Gas Engineers and Managers:** Summer Meeting, Taunton.
July 1.—**Manchester District Association of Gas Engineers:** President's Day, Blackburn.

'BRITAIN'S GREATEST COAL PROCESSING INDUSTRY'

MR. G. MATTHEWS ON INSPIRED TEAMWORK

THE Spring Meeting of the Midland Association of Gas Engineers and Managers was held at Solihull on May 26. In keeping with tradition it was 'President's Day,' the occasion on which a large attendance of members visited the President's works. It was the first time that the West Midlands Gas Board, instead of the local gas company or committee, filled the rôle of hosts, and it was good to find that the event lacked none of its former attractiveness.

The members were welcomed at the Solihull gasworks by Mr. George Matthews, J.P., Deputy Chairman of the West Midlands Gas Board, in the regretted absence of Mr. G. le B. Diamond, Chairman, and by Mr. S. J. Sadler, President of the Association and General Manager and Secretary of the Solihull undertaking. The morning was devoted to an inspection of the works, the output of which has increased by 900% in the 28 years of Mr. Sadler's management.

Luncheon followed at the Solihull Council House, presided over by Mr. Matthews and attended by other members of the West Midlands Gas Board, the Chairman and some of the members and officers of the Solihull Urban District Council, Mr. H. R. Hems, Chairman of the Midland Section of the Institute of Fuel, and many other guests.

Board's Big Task

Councillor **Maurice Walker,** J.P., Chairman of the Solihull U.D.C., proposed the toast of the West Midlands Gas Board, and

Mr. S. J. Sadler (left), President of the Midland Association of Gas Engineers and Managers, Mr. G. A. Matthews, J.P., Deputy Chairman of the West Midlands Gas Board, and Mr. A. W. Smith, C.B.E., part-time member of the Board, at the Spring Meeting of the Midland Association at the Solihull gasworks on May 26.

said it was not without a sense of regret that he was proposing such a toast instead of that of the Solihull Gas Company. It would have been appropriate if such a visit could have taken place while the undertaking which the President had served for so long had still been under the control of the local company. In these days, however, they had to accustom themselves to changes, and following the nationalisation of other industries the turn of the gas industry had arrived. Everyone had his own views as to whether nationalisation was a good or a bad thing, but it was the will of the people as expressed through Parliament that the industry should be nationalised and in a democratic country they must accept the decision of the majority and do their best to make the arrangements work satisfactorily. The West Midlands Gas Board had a very difficult task before it to weld the various gas undertakings in the area into one unit, and he was sure that the members of the Association as well as the local authorities in the area would do their best to assist the Board in that work.

His own experience of the gas industry in the past had been that it was an extremely efficient and well managed industry which had given good service to the public at a reasonable price. He could assure the Board that its work would be judged by the public on the standards to which they had been accustomed. Not only would they look forward to a continuance of that service, but if anything to an improvement in the efficiency of the industry and of the service which it gave to the public. Equally they would be looking forward to cheaper rates for the supply of gas. The majority of people in this country were somewhat mercenary and were disposed to judge an industry by the way it affected their pockets when they had to buy the commodity which it produced. Any increase in price would therefore not be at all welcome. He was confident the members of the Board were sufficiently acquainted with their work to know that it was essential to keep the price of gas as low as possible.

One Object in View

Mr. **G. Matthews,** Deputy Chairman of the Board, responding to the toast said he could well understand the feelings of those who had served and lived for the industry in the past. Many of those present had served the local authorities, and through them the local gas committees for many years and had given the greater part of their lives to voluntary service and had helped to build up this great industry. He thought, too, of those companies which years ago in their early days took a great risk in investing their capital in the gas industry, whose directors had lived to see it grow and become Britain's greatest coal processing industry. He could well understand their feelings in handing over and he paid them his tribute as a humble member of the team who were to carry on in the future. He was very pleased to see his old friend and one-time chief, Mr. Ramsden, under whom he started work in the gas industry 47 years ago.

Members of the Gas Board were drawn from many strata of society. In the main they were men who had had experience in the gas industry; others had spent a lifetime in public administration, and he could say without hesitation that the members of the Board were not unmindful of the great tradition that had been passed over to them. They were entering into their new job with one object in view—to make a success of it. The industry was very dear to them and they would see that the work of the pioneers was not wasted. They would see to it that the interests of the consumer must come first, for without the consumer they could not have an industry. They were not unmindful of the interests of the engineers and technicians, right down to the humblest workmen. They were proud of the men who had worked in the industry for so many years. The industry had reason to be proud of the staff it had gathered round it; they were men who had always given loyal and gallant service. The old type of gas worker as he knew him was a man to be proud of; the old stoker loved his job and the man he worked for. Unfortunately in recent times men had had to be taken into the industry who were not inspired with the same high ideals, and they were faced with changes.

Integration Necessary

Whatever might be said about the political aspects—and it was not his job to develop the theme at that stage—he could say that he had not yet met an engineer in this country who did not agree that in the development of the gas industry integration was absolutely necessary. Integration was necessary in the interests of the industry and the preservation of our coal reserves, as well as in the interests of the consumers and from every possible angle. He hoped and believed that the Gas Board would continue to work as a team inspired by the one motive of promoting the best interests of the consumers and everybody who worked in the industry. Apart from the men who had been more directly in contact with the Board many of the engineers, and particularly the juniors removed from the centre of control might feel a sense of isolation, and of ignorance of what was taking place. That was not the wish of the Board. For the past three months, for almost every hour of the day, their time had been taken up in dealing with matters of banking and accountancy, and it had been a terrific job. Now that they had got over that stile they should be able to take a clearer view of the future. He wanted to ensure every young engineer and technician, no matter how far removed he was from the centre of the area, that the Board was interested in him. As the scheme evolved and they began to get a clearer picture they wanted to draw them in and make them feel that they were part and parcel of the team. Whatever the Gas Council or the area Boards might, in their wisdom, decide to do, they must have the goodwill and co-operation of every individual working in the industry, and he felt sure that so far as the West Midlands area was concerned, they would get that.

He regretted that urgent business in London had prevented Mr. Diamond from attending, but he could give an assurance that as soon as possible it was his intention to go round and visit each works in the area to see the men on the spot and talk over their problems. Mr. Diamond appreciated the difficulties and the problems of the engineer on the small works equally with those of the bigger ones, and he had asked him

to give them the assurance that he would come and see them as soon as he could. The members of the Board were confident of the support of the members of the Association. So far they had not struck any snags; everywhere they had been assured of practical co-operation.

Mr. **W. Maurice Mell,** LL.M., Clerk and Solicitor of the Solihull U.D.C., proposed the toast of the Association and said he knew of no-one who was held in higher esteem in Solihull than Mr. Sadler, who came to the district in 1921. When it became an urban district in 1932 it had a population of 25,000, and to-day there were 67,000 people within its boundaries; and according to the planners they were told to expect a total population of 110,000 by 1962. Mr. Sadler had been closely associated with the development of the district and had been responsible for building up the gas undertaking to keep pace with the town's phenomenal growth. He had worked very harmoniously with the local authority and had taken an active part in the life of the district. Any organisation with benevolent or charitable objects had always found in him a strong supporter, and he had done his bit for every organisation with which he had been associated. The work of the Midland Association of Gas Engineers and Managers was of great value and its educational activities were to be highly commended. Speaking for a host of Mr. Sadler's friends, he congratulated him on having been President; in honouring him the members had honoured themselves.

Mr. **S. J. Sadler,** replying, expressed his special pleasure at the presence of Mr. Robert Bragg, his immediate past Chairman, and paid a tribute to him for the excellent service he had rendered in the cause of gas in the Solihull district. He had been extremely sorry to lose him as Chairman but he hoped their friendship would long continue. No-one could have had a more friendly and progressive board of Directors than he had had throughout his 28 years at Solihull. Next he wished to tender to Mr. Walker on behalf of the members hearty congratulations on his election that week as civic head of the district. He also congratulated Mr. C. C. Spragg, a member of the West Midlands Gas Board, on his election as Mayor of Smethwick. Thanking the proposer for his personal remarks, he said that whatever he had done for the good of the community of Solihull had been a labour of love. Regarding the Midland Association, there was no better team spirit to be found anywhere than among the members. Their aim was to help each other, and an outstanding example of that was the Gas Engineering Advisory Board set up during the war, a movement brought about chiefly by Mr. C. F. W. Rendle, whom he was pleased to see present that day. Theirs was the first of such Boards to be established and it had proved to be of inestimable value not only to engineers but also to consumers.

To-day they were in a state of transition and team work was never more important than it was now if the industry was to be maintained at the high standard that prevailed before nationalisation. To many of them the industry had been their life's work, and despite any alterations that might come about it would remain so. Amalgamation in the industry would no doubt promote development. It might produce a few cases of hardship, but to his mind the balance should be all in favour of increased efficiency and economy, and to that end they could assure the area Board that they would continue to give of their best for the sake of the industry. The Midland Association drew its members from 16 counties and all of them had contact with the leading citizens in their areas to an extent which no other activity in the gas profession afforded. They had always been on very friendly terms with their local authorities, and in a number of cases their members had been esteemed as leading citizens. Their interest in public affairs had done more for the industry than could be estimated, and it was to be hoped that such ties would be continued and even strengthened in the future.

He thanked Mr. Matthews for presiding in the absence of Mr. Diamond, and he also thanked the West Midlands Gas Board for their kind invitation and hospitality. It was gratifying to know that the Board wished such meetings to continue so that they might discuss their various gas problems. Finally he paid tribute to his own loyal staff at the works and in the office. Whatever he asked them to do they did willingly.

The afternoon was devoted to a visit to the Meteor Works of the Rover Company, Ltd., where great interest was taken in the assembly of vehicles and the testing of the new 'Land Rover.' At the end of the tour of inspection, tea was served in the staff canteen, and the thanks of the members was expressed by Mr. Sadler, who referred especially to the kindness of Mr. L. G. T. Farmer, Secretary of the Company, and Mr. L. Shaw, Welfare and Apprenticeship Superintendent, who were mainly responsible for organising the tour. Mr. Farmer replied on behalf of the Directors and remarked that although the factory was not using quite so much gas as during the war a considerable amount of the products of Mr. Sadler's works was still employed.

THE SOUTHERN ASSOCIATION *vis-a-vis* THE INSTITUTION

ENDORSEMENT OF RESOLUTION AS DISTRICT SECTION

THE Spring General Meeting of the Southern Association of Gas Engineers and Managers was held at the Connaught Rooms, Kingsway, London, on May 24, under the Presidency of Mr. L. P. Ingram (Taunton). Mr. J. M. Webber, Hon. Secretary and Treasurer, reported the receipt of a total of 80 apologies for absence.

The meeting accepted with regret the resignation of Mr. P. E. Browne (Hove), who had been a member since 1922, Mr. J. N. Higgs (Swanage), a member since 1924, Mr. S. Smith (Romford), a member since 1946, and Mr. R. C. Macdonald (Scotland), a member since 1918.

The **Secretary** reported the death since the last meeting of Mr. R. Benyon, who became a member in 1897 and was President of the Association in 1898, and who was elected to Honorary Membership in 1946, Mr. D. H. Helps, a member since 1898 and President in 1904, Mr. S. J. Ingram, a member since 1917, and Mr. G. M. Gill, a member since 1907.

Mr. **J. H. Dyde,** Deputy Chairman of the Eastern Gas Board, said the Association had suffered a great loss by the death of four of the very oldest members. All of them were men who had added lustre not merely to the Association but to the gas industry as a whole, and on behalf of the Association he extended deep sympathy to the President in the loss of his father, and to all who had suffered bereavement by the losses which had been reported.

The members stood in silence as a mark of sympathy.

Mr. Dyde Becomes President-Elect

The **President** said it was not customary to eulogise the President-elect at the Spring meeting; it was usual to save up all the nice things to say about him when he was inducted to the chair at the Autumn meeting. He therefore formally proposed that Mr. J. H. Dyde be President of the Association for the year commencing on July 1. The choice was an obvious one, and he was confident that Mr. Dyde would have the unanimous support of the members of the Association as he himself had done during the past year.

Mr. **T. C. Battersby** (Watford) seconded the nomination and said Mr. Dyde had done an enormous amount of good work for the Association. They remembered his Chairmanship of the Eastern District in a very active year, and he was pleased to think that if the Association lived to have another President it would be Mr. Dyde who would fill the office.

The nomination was confirmed with acclamation.

Mr. **Dyde,** returning thanks, said he appreciated the honour very much indeed. He had derived much from the Association in the years in which he had been a member since 1936. He had made many good friends and he had enjoyed every moment of the time he had spent in connection with the Association. He had been, as members knew, a rather strong advocate of the scheme which was initiated by Mr. H. J. Escreet that the Association should become a District Section of the Institution of Gas Engineers. The members had discussed that matter and he did not propose to go into details at that stage. They agreed to it in principle subject to certain reservations which he thought would be ironed out by the Institution. In some ways he had hoped that the negotiations would have gone through before the end of the Association's year, in which case he would have been the first Vice-President who would not go forward to the actual position of President. However, the negotiations, as could be well imagined, had been somewhat protracted. The Institution had yet to deliberate with the other associations and it had therefore been quite impossible for the scheme to go through in time for next session. Having known his views on that matter, the members still felt that he should go forward as President, and in that knowledge he would fulfil the office with such ability as he was able to summon, and if he happened to be the last full specimen of a President he hoped he would expire gracefully.

The Vice Presidents

Mr. **Dyde** then proposed the election of Mr. T. C. Battersby as Senior Vice-President. He had known him as a friend and colleague and engineer for a good many years. He admired his work very much indeed, and in putting his name forward he was confi-

dent that the Association would have a very capable man to serve as Senior Vice-President, and one who would fill the office with the greatest dignity.

Mr. W. K. Tate (Portsmouth) seconded the nomination. He said it was rather sad in many ways that the Association was going to change its structure, but he agreed with Mr. Dyde that it was probably the best thing for them. That being so, they were fortunate in having Mr. Dyde as their next President to pilot them through the negotiations, and they could not do better than to appoint Mr. Battersby to be his right hand man and to give him that strength and guidance which would be needed.

The nomination was unanimously confirmed.

Mr. Battersby, in reply, said there seemed some doubt as to whether he would succeed to the Presidency, but so long as he held the office to which he had been elected he would do his utmost to support the President, and he would retire quietly when he became redundant.

Mr. F. Dawson (North Middlesex) proposed the election of Mr. W. K. Tate as Junior Vice-President. Mr. Tate had, he said, shown his paces as Chairman of the Eastern District, and they appreciated the way in which he had conducted the business during the past year.

Mr. R. J. H. Clark (Plymouth) seconded, and the proposition was carried unanimously. Mr. **Tate** briefly returned thanks for his election.

Election of Officers

With regard to the election of Auditors, the **President** announced that Mr. C. F. Botley was willing to accept re-election, but Mr. J. H. Donaldson had expressed his wish to retire. Mr. H. A. Probin, however, had signified his willingness to accept office if it was the wish of the members. On the proposition of Mr. **J. W. Denton** (Torquay), seconded by Mr. **W. J. Imbrie** (Yeovil), Mr. Botley and Mr. Probin were unanimously elected.

The **President** said there were many good reasons why he should ask Mr. J. M. Webber to continue in office as Hon. Secretary and Treasurer, and he was pleased to announce that at the Council meeting earlier that day Mr. Webber had agreed, conditionally, to accept the office. He therefore proposed his re-election.

Mr. **F. E. Cox** (Tiverton), in seconding, said that as a member of the Council for the last three years he had seen a great deal of the efficiency with which Mr. Webber had carried out the duties.

The nomination was unanimously confirmed.

Mr. **Webber,** in response, said he felt it only right to point out that a large proportion of the work was carried out by Mr. Howcroft and by his own staff at Croydon. He gave a warning that it might be impossible for him to continue the duties throughout the session, but if the members felt he could be of any use he would be pleased to carry on for the time being rather than retire at the present juncture.

On the proposition of Mr. **F. E. Hammond** (Lews), Messrs. L. P. Ingram, F. Dawson and W. A. Barnett were re-elected as representatives of the Association on the Managing Council of the Gas Engineers' National Guild.

The **President** said the one member who really mattered was Mr. Dawson, who had been Vice-President of the Guild for the past 12 months and had acted as President since Mr. G. E. Currier resigned on taking up his appointment as Deputy Chairman of the North Eastern Gas Board. The work had therefore fallen entirely on the shoulders of Mr. Dawson, and he hoped that at the next meeting of the Guild in June they would see him go into the Presidential chair.

The **Secretary** submitted the names of the personnel of the District Committees as follows :—

Eastern District : Colonel J. A. Gould (Chairman), Dr. A. E. Haffner (Vice-Chairman), L. Muir Wilson, E. O. Rose, H. Bradley, C. H. Chester, R. G. A. Clark, A. Tran, Dr. J. Burns, W. W. Chisholm, J. H. Hornby, W. G. Phillips, P. Richbell, J. D. C. Woodall, C. R. M. Croft, W. A. Evetts, L. C. S. Poulter, R. Prince, A. H. Savill, and F. White.

Western District : J. H. Cornish, Junr. (Chairman), H. H. Brown (Vice-Chairman), J. Carr, S. B. Jones, J. H. Lowther, A. H. Dunn, E. V. Dunn, F. E. Cox, J. W. Dean, and R. J. Williams.

The **Secretary** also announced the names of the new District Representatives on the Council of the Association, as follows : Eastern District : L. Muir Wilson, Dr. J. Burns, and J. H. Hornby. Western District : J. Carr, H. H. Brown, and W. Verity.

The Council recommended acceptance of applications for membership from the following :—

Associate : W. Morland Fox, Director, W. J. Jenkins & Co., Ltd.

Members : A. G. Westlake (Falmouth) ; J. H. Wilkinson (Portland), and G. J. B. Cox (Tunbridge Wells).

The recommendation was confirmed, and the President extended a cordial welcome to Mr. Cox, the only candidate present.

Relationship with the Institution

The **President** stated that following discussions in the two Districts on the subject of the future relationship between the Association and the Institution of Gas Engineers he had asked Mr. Webber to write to the Secretary of the Institution suggesting that in the light of the recommendation made by the Council that the Association should apply to the Institution to become affiliated as a District Section of the Institution, the Council of the Institution might, in order to save time, proceed to consider the terms and conditions of such closer affiliation. In April the Council of the Institution discussed the matter at great length and referred it to its General Purposes Committee. As a result of their deliberations Dr. Braunholtz had prepared a draft setting out the suggested rules for the formation of District Sections. The Association had been invited to send representatives to meet the General Purposes Committee at their meeting on May 10. Mr. Escreet, who was responsible for raising the question in the first instance, with the Senior and Junior Vice-Presidents and himself, attended in response to the invitation and they had a free and frank discussion on the subject, as a result of which a second draft had been circulated for comment.

In his view, this gave them practically all they had asked for originally. Briefly the proposals were that every member of a District Association should be admitted to some form of membership of the Institution. The door of membership of the Institution would be thrown wide open to let in everybody who was already a member of a District Association. Thereafter, admission to the Institution would be more selective and would be achieved through the normal channels. Membership of District Associations would then be open only to members of the Institution, and there would be no direct application to the District Association for membership. Applications would go to the Institution, and if accepted the members, if they so desired, would automatically become members of the appropriate District Sections. That arrangement met their wishes almost entirely so far as membership was concerned. It had been felt in the south that this might possibly open the door of membership of the District Association to people whom they in the Southern Association had previously not accepted. The proposals had therefore been amended to the effect that automatic membership of the District Section was to be confined to the District Section covering the area in which the candidate concerned normally resided. It had been thought possible that they might have a flood of people coming in on the contracting side who were living in the area and who might demand admission to the Southern District Section. The Institution had agreed that the question of admitting such persons to membership of the District Sections should be decided by ballot in the case of each application for admission to the Section concerned.

Financial Arrangements

Another point discussed was the question of finance. Originally the Institution felt that the question of finance should be in their hands and that a *per capita* grant should be made to the District Sections. There were a number of arguments against that proposal, and these were submitted to the General Purposes Committee and then to the Council, and now in the final draft it was provided that financial matters should be in the hands of the District Sections, with the sole proviso that alterations in the amount of the annual subscriptions should be subject to the approval of the Council of the Institution of Gas Engineers. Each District Section would elect its own Management Committee and run its own Section practically in an autonomous manner.

That was the gist of the draft document which had been circulated to members of the Council of the Institution and to the Presidents and Secretaries of the District Associations. It was now proposed to call a further meeting between the General Purposes Committee and representatives of all the District Associations to finalise the matter. It had been agreed at a meeting of the Southern Association's own Council that morning to recommend that a small sub-committee should be set up with power to act. At the next meeting they must be in a position to say yes or no, without having to refer the matter back to the Council or to a subsequent general meeting. It was recommended that the subcommittee should comprise the immediate past President, the President, the two Vice-Presidents, the Secretary, the Chairmen of the two Districts, and Mr. Escreet, who set the ball rolling nearly two years ago. With the approval of the meeting, that subcommittee would meet the General Purposes Committee, and he hoped they would give it power to act.

The **Secretary** read the minute of the Council meeting of Jan. 25, recording that a resolution was passed recommending application to the Institution for incorporation as a District Section (or Sections) of the Institution, subject to agreement regarding terms and conditions. That resolution had been placed before the Committees of both the Eastern and Western Districts and had been subsequently endorsed by the members of both Districts in general meetings.

The **President** said it was now necessary for that resolution to be endorsed, or otherwise, by the general meeting of the main Association, and he moved accordingly.

Mr. **G. R. Bullwinkle** (Vauxhall, South Eastern Gas Board) seconded, and the resolution was carried unanimously.

The **President** then called upon Mr. H. H. Brown, Manager, Exeter and District Sub-Division, South Western Gas Board, to present a paper on 'Consideration of Economy and Efficiency in Relation to Present Problems in the Gas Industry.' The paper is published on pp. 504 *et seq* of this issue.

CONSIDERATION OF ECONOMY AND EFFICIENCY IN RELATION TO PRESENT PROBLEMS IN THE GAS INDUSTRY*

By H. H. BROWN, M.INST.GAS E., M.INST.F.
Manager, Exeter and District Sub-Division, South Western Gas Board

THE gas industry has developed under circumstances which have been associated with evolving economics and changing legislative controls, in which politics, and restrictive and protective legislation, have had a major effect and have accompanied the normal economic pressure of external influences. Internally, the industry has been affected, not only by economic factors such as the design and size of units of production, managerial control of efficiencies, development of sales policy in marketing of products and of consumer service, but has been influenced by the nature of the various forms of ownership. As a result we have production plants in every stage from low to high efficiency.

Although most of these factors, except diversity of direction, will still continue to determine the operation of the gas industry of the future, the importance of those influences partially under managerial control will be increasingly felt and the relationship between efficiency and economy in an unstable field will be of the greatest concern. The goal of high efficiency is a normal directive, but the effect of the cost of obtaining this is a major consideration. A substantial increase in the efficiency of one of a sequence of operations may have only a negligible effect on the economy of the whole. For instance, to give an example outside managerial control, it could be shown that if the thermal efficiency of locomotion, as applied to the rail transportation of coal, were doubled, the economic effect, when applied to the delivered price of coal 250 miles from the coal pit, would be not more than 1%.

Size of Plant

The size of the production plant would appear to have a profound effect on economic performance, other things being equal, and it will be argued that there is a size below which it is extremely unlikely that efficient and economic working will result. The first consideration is the question of the smallest well designed carbonising unit, suitable for the coals to be used, which can be installed, maintained and repaired at a cost not unduly higher than normal. Most carbonising units have an elasticity of production giving limits between which they can operate without undue loss of thermal efficiency, although economically requiring a closer approximation to full performance.

Where the carbonising plant is divided into a small number of production units the economic result of varying the number of such units at work to cope with varying demand is highly disadvantageous. Reference may be made to yearly output curves (Figs. 1 and 2). In the small works, the smallest unit of

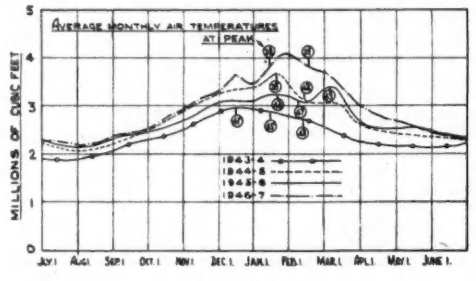


Fig. 1

production bears too high a proportion to normal output and an extra bed of retorts has to be put to work to cover, or even to anticipate, a lengthy period when one extra retort only would be sufficient. The absence of carburetted water gas units on small works also precludes economic working of the coal gas units.

When the consumption graph normal to the class of gas sales has been established, it should be possible to designate (given a knowledge of the minimum economic size of unit which could be installed and a note of the elasticity of the production of the individual unit) the number of such units, and as the elasticity ratio (minimum to maximum) is as three is to four, it follows that the number of units to be employed at maximum demand should not be less than four, and the total available should be not less than five.

Carburetted water gas production is suited to take up the difference in output of normal daily fluctuations and has a high expansion ratio in view of the possibility of cutting out one or two shifts, although this feature introduces a new factor of economic expense, both with regard to production costs and

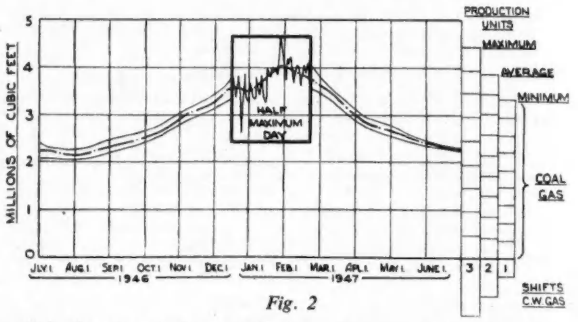


Fig. 2

capital charges of the installation. The smallest unit of carburetted water gas plant in normal use is 200,000 cu.ft. per diem capacity with a single shift output of 50,000 or a double shift of 120,000. The smallest economic unit of coal gas plant in normal use might be taken as 120,000 cu.ft. per diem.

It follows that with carburetted water gas as standby to take seasonal fluctuations using one, two or three shifts the smallest plant (if consideration is given only to production economy) is approximately 300 mill. cu.ft. per annum. There are other equally important and obvious issues connected with minimum sized undertakings, and these include technical supervision and the labour costs in operation.

It is obvious, of course, that a straight line output through the year is not an ideal, in view of the necessity of shutting down units of production for repair or renewals. The proportion of the normal time worked by carbonising units, compared with the total of working time plus the shutting down and starting up periods, is significant in determining the number of units required to make up the total production. Differences in daily outputs over a normal week will be found to vary considerably with the type of public served, and charts showing representative daily outputs over a week for (*a*) an undertaking supplying a residential town with approximately 10% industrial load, and (*b*) where the industrial load is approximately 40%, will illustrate this point (Figs. 3 and 4).

The operation of a five-day working week in industry has given rise to difficulties in assessing the value and consequently, the price, at which gas can be supplied to those industries and serves to indicate the view that because of the high cost of storage, details of which are given in Table A, works supplying an industrial district can justify a maximum day's storage, whereas works with a small industrial demand should be content for the time being, to have half this amount.

Table A.—GASHOLDER CAPITAL COSTS.
(Basis maximum day's storage.)

Plant capacity (mill. cu.ft.)			Cost	Funding @ 3% (annual charges)		A + B	Pence per 1,000 cu.ft.	Pence per therm (450 B.Th.U.)
				Interest	50 years amortisation			
Per annum	Maximum day	Average day	£	A £	B £	£		
60	0.25	0.164	23,000	690	198	888	3.55	0.788
125	0.5	0.343	35,000	1,050	301	1,351	2.59	0.576
250	1	0.685	58,000	1,740	499	2,239	2.15	0.478
500	2	1.37	95,000	2,850	817	3,667	1.76	0.391
1,000	4	2.74	164,000	4,920	1,411	6,331	1.52	0.338
(Basis half maximum day's storage)								
125	0.5	0.343	23,000	690	198	888	1.71	0.38
250	1	0.685	35,000	1,050	301	1,351	1.30	0.288
500	2	1.37	58,000	1,740	499	2,239	1.075	0.239
1,000	4	2.74	95,000	2,850	817	3,667	0.88	0.196

(*Continued on p. 509*)

* Paper presented to the Southern Association of Gas Engineers and Managers May 24, 1949.

Continued from p. 504

Although the gasholder is the only substitute for the ideal consumer balancing daily load, the necessity imposed by present day costs and shortages of steel and fabricating labour indicates that less storage capacity than was formerly considered desirable must suffice. The difference in cost per therm (as between half day's and whole day's storage) to cover logical funding charges based on a 50 years' life and interest rates of 3% in the case of a normal 1,000 mill. undertaking, and as shown in the table, would be approximately 0.142d. per therm. In the case of a normal 125 mill. undertaking, the corresponding saving would be 0.196d. per therm.

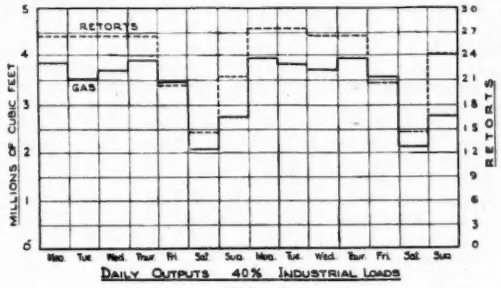

RETORTS
GAS
MILLIONS OF CUBIC FEET
RETORTS
Mon. Tue. Wed. Thur. Fri. Sat. Sun. Mon. Tue. Wed. Thur. Fri. Sat. Sun.
DAILY OUTPUTS 40% INDUSTRIAL LOADS

Fig. 3

The table also indicates the advantage of the lower production unit in respect of storage charges. The proportional reserve of storage is, of course, increased where the holders are spaced with respect to the district served and provided with compression boosters to enable a governed pressure to be maintained irrespective of the residual storage.

The question of maintenance charges and particularly of painting is, in view of the similarity of dimensional design of gasholders, all in favour of the larger installation. In holders and tanks of similar proportions the surface area is proportional to the two-thirds power of the volume.

In view of all these factors it is suggested that works of under 200 mill. cu.ft. per annum output are not normally economically sound under present conditions. Undertakings smaller than this have for the most part been incapable, in the past, of producing gas and providing a consumer service economically at normal charges. In many cases these works have been undeveloped and not properly maintained.

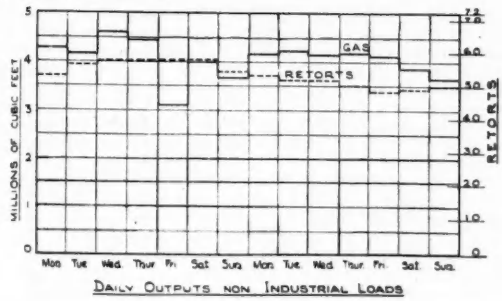

GAS
RETORTS
MILLIONS OF CUBIC FEET
RETORTS
Mon. Tue. Wed. Thur. Fri. Sat. Sun. Mon. Tue. Wed. Thur. Fri. Sat. Sun.
DAILY OUTPUTS NON INDUSTRIAL LOADS

Fig. 4

Process Economics

The bases upon which processing efficiencies and overall economics are calculated are not necessarily parallel. Process efficiency can be measured in terms of the proportion of the net fuel therms produced (gas, coke, and benzole) and available for sale as compared with the therms supplied (coal, coke, oil, and electricity).

Fuel and power used for steam raising, &c., for normal ancillary processes (exhausting, pumping, purification, &c.) is a charge on the main process but it is unwise to include (where a distinction can be made) the fuel used in manufacture of sulphate of ammonia, road tar, &c. The process economics, however, are measured in terms of the proportion of the net value of the gas, coke, tar, sulphate of ammonia, and benzole sold as compared with the cost of coal, coke, oil, and electricity purchased.

Subsidies

When the field of economic survey is widened it soon becomes evident that the effect of subsidies arises, and to avoid confusion it is desirable to divide the incomes and expenditures into well defined departments. This arbitrary division is likely to become uniform over large areas if not nationally and a basis will have to be determined for allocating capital and other overhead charges fairly between the various departments. In the past, due to differing sales policies and the divergent methods of buildings up or absorbing capital costs, adjacent and similar undertakings exhibited what must have appeared to the public to be unaccountable variations in the sale price of gas and coke in respect of co-equal thermal efficiency.

It is evident that uniformity of gas charges can only be achieved by a system of subsidies (internal to the industry) and is likely to be more difficult owing to the tendency towards increasing the price of the better types of gas coals which from the national economic angle should travel the longest distance (because of the lower proportion of inerts to be transported).

The cost of transporting ash is obviously one to be curtailed, but little advantage is derived, from the economic viewpoint, from the substitution of water for ash. With coke at controlled water content it is better to have, from the revenue from coke angle, total inerts made up principally in ash rather than in water, although the effect of ash is to reduce efficiency and economy in so far as the coke is used on the works, and is not for sale, and in so far as the increase in ash is associated with a bigger proportion of 'smalls' in the coke grading system.

The joint effect of higher pit head price plus higher freight charges will pose a very serious problem to those who favour uniformity of gas charges over a wide field and it can only be solved by the imposition of internal subsidies throughout the area. This could be achieved either by balancing the losses and profits of constituent undertakings, or by dealing with coal prices and freight payments centrally and debiting works at a uniform rate for delivered coal. Whichever method might be used it would be imperative to know the real price of delivered coal to unit producers in order to assess the true economy of operation.

It is possible to calculate the economic advantage or otherwise of any integration scheme only when this knowledge, together with other relevant factors, can be ascertained.

Integration

Pumping gas to consumption points previously served by a number of small production plants involves costs associated with the extinguishment of the non-usable assets of the replaced unit, capital costs of main and compressors and the operational costs of pumping and, in addition, the net increase cost of supplying coke to the local markets. The balancing factors include not only the reduced cost of production at the principal or base load works, but also the difference between the capital and maintenance charges involved in utilising a smaller reserve of plant in relation to the total reserve which would have had to be provided at the smaller replaced units if in fact those units had severally to be continued. The cost advantage of smaller storage cover would also have to be ascertained. It is obvious that this last item is of academic rather than practical interest as gasholders are purchased in relatively large units and not just to satisfy the requirements of the moment. An important factor involving economic advantage which is difficult to assess, is the profit from potential loads to be developed either in the districts already served or procured along the line of main.

One of the difficulties in making an approximation of the development advantage at present is the higher charge for gas at the consumption end of the system and the psychological difficulty in obtaining a reliable guide from the prospective consumer. Overcoming a prejudice associated with a poor consumer service which cannot immediately be improved is another difficulty.

Isolation

The problem of improving the economical operation of those plants which cannot be joined by main is one which cannot rapidly be settled and probably indicates the necessity for specially designed intermittent carbonising systems which can be left unattended during the night and which may rely on a central flue way, or, in places where readily steamable coals are available, the provision of inter-coal heated total carbonisation units where the exothermal reaction is utilised within the retort or producer. In many small works there is no provision for steaming but in works of over 75 mill. cu.ft. per annum justifying shift work specially designed coke-water gas or coal-water gas plant may be a solution. This is however a problem which requires specialised study.

Tariffs

Regarding the structure of gas prices, this should be built up with a knowledge of the manufacturing costs of gas into holder, due allowance being made for the net return of by-products and a knowledge of the maximum cost of distribution, including compression.

There are several different systems which have been in use as a basis of charge, and it is not intended to examine the economic aspect of the various systems. It is somewhat dangerous to assume that what appears to be a good load (by virtue of the hours during which gas is consumed) should merit a price which approaches the cost of production, plus servicing charges, plus overheads. In this connection, it might be considered by many, for instance, that the bread-baking load approaches the ideal, but there is no guarantee that what is now a night load would not in the near future suddenly switch to a day load, and be imposed upon peak delivery.

It is not rational to postulate that the subsidising of one class of consumer by another should not be tolerated, because, in fact, this is bound to operate in varying degrees. There is no doubt that in the past promotional tariffs have built up a reasonably desirable gas load, but the degree to which future business can be obtained in this way may be a problem associated more intimately with local consumer conditions.

Solid Fuel

The advantage of coke and other processed fuels over household coal in open fires, openable stoves, and boilers has been demonstrated, although past methods of assessing the factual or relative efficiencies have not been beyond criticism. Notes of relative efficiencies are appended representing a summation of results which may be taken as a fair indication of the range experienced in normal use.

Plain open fire (no convector or boiler):

	Coal %	Coke %
Radiation	18—23	22—27
Open fire with convector:		
Radiation	10—13	13—16
Convection	10—15	10—15
	20—25	23—30
Open fire with back boiler:		
Radiation	10—13	13—16
Boiler	15—20	20—28
	25—30	33—40
Open fire with convector and back boiler:		
Radiation	8—10	9—11
Convection	circa 6	circa 8
Boiler	18—22	22—27
	32—36	39—42

In all the above cases the loss through hot air escaping via the flue may be between 40 and 55% for coal, and between 45 and 60% for coke. In addition the loss as unburnt gases and smoke may be up to 20% with coal, though negligible for coke.

Openable Stove: Efficiencies:—

	Coal		Coke	
	Open %	Closed %	Open %	Closed %
Radiation	c 7	c 3	c 9	c 2
Convection	c10	c10	c10	c 6
Boiler	c15	c13	c22	c18
Total efficiency ...	c32	c26	c41	c26
Losses:				
Flue	c40	c53	c45	c55
Unburnt gas	c20	c 7	Nil	Nil

Boilers of good design of 20,000 to 100,000 B.Th.U. per hour capacity burning anthracite, bituminous coal or coke, may have efficiencies between 70 and 80%.

There is always the risk that exaggerated claims based on individual tests may be misleading and it is not reasonable to calculate the fuel saving which would result from the improved efficiency associated with any new type under report co-related to the bulk use of the appliance. Rather it is likely that the increased efficiency would be instrumental in dissipating more heat for the same consumption of fuel. It is possible to demonstrate that open fires with excessive draught may indeed act as though they possess a negative efficiency, cooling the room in which they have been fixed. This can operate when they are installed as additional heat sources in rooms which are part of a background centrally heated installation.

Conclusion

Regarding the part which the gas industry may, in the future, be called upon to play in spite of a complete absence now or at any time in the past of the existence of a national policy for fuel, nothing but satisfaction can result from further improving the efficiency and particularly the economy of operation of production and utilisation of gas. It may well be that the gas industry, after recovering from the war-time lag in new capital and maintenance expenditure, will be in a position to point the correct approach to solving a stubborn problem.

A golden opportunity presents itself to put on a rational basis the distribution of suitable coals for processing to suit the carbonising plants and develop the type of plants for future use best suited to the coals which will become available. It is also possible to improve the movement of coke and ensure that the best is marketed and the remainder gasified.

In the gas utilisation and consumer service side of the industry much has to be done to improve backward areas and it may be that a considerable period will elapse before the supply of appliances is free from imposed restriction or economic considerations. Coincident with the increased efficiency of modern designs and with an ultimate improvement in the insulation of heating apparatus in the necessary places, and also within the structure of the modern house (roof and wall insulation) will come a decrease in apparatus consumption which to some extent may balance the increased costs per therm. If, however, the selling of service to the consumer is the right policy this should not be measured in terms of the cost of the fuel or prime mover but in the convenience and usefulness of that service. If the service is good enough the consumer will pay readily.

In conclusion I should like to express my pleasure in offering this short paper which does not claim any originality and in which I have made no references, and to acknowledge my indebtedness to the South Western Gas Board for the opportunity of presenting it.

DISCUSSION

The **President** said Mr. Brown had rendered a useful service in bringing together in a short paper some of the fundamental considerations which must be exercising the minds of many of them in these days of integration. It would have been helpful, however, if he could have given a clearer definition of the word 'efficiency.' Was he thinking of getting the greatest number of therms per ton, judged on the figures for the heat balance; was he referring to the cheapest therm judged by £ s. d. considerations; or was the ultimate efficiency based on the elusive judgment of the consumer, as to whether he was getting what he wanted at a price that he could afford? He agreed with Mr. Brown's suggestion that price was not necessarily the deciding factor where convenience and usefulness were concerned. Today they were faced with the problem of producing a master plan for their industry, free from restrictive legislative controls and local prejudices and, they hoped, free from narrow-minded financial considerations.

He suggested that they had all been somewhat guilty of the rather loose use of the words 'economy' and 'efficiency.' For instance, Mr. Brown had said that the smallest economic unit of coal gas plant in normal use might be taken as 120,000 cu.ft. per day. If he had said the smallest technically efficient unit he would have been inclined to agree, but the statement as it stood was too drastic. He had in mind a small works in Somerset, 13 miles from anywhere, which was run by three brothers who did not necessarily work 48 hours a week. On the basis of £ s. d. it was an economic unit, but its technical efficiency was low and its ultimate efficiency was poor, because there were wide variations in calorific value and the consumers could not get a really satisfactory service.

A Major Financial Problem

That undertaking was typical of many in the present gas industry, and the solution of such problems was a major financial headache for those who were going to decide on policies of integration. In a lesser degree it was a headache to individual technical men, particularly those in the bigger undertakings who were about to take over a number of small undertakings.

It was suggested in the paper that subsidies were necessary for price levelling. He would go further and say that they were essential in the interests of technical efficiency in the use of our greatest national asset, coal, and in the ultimate overall efficiency of the gas industry in giving the best possible service to the consumer, whatever his needs were.

Mr. **Brown** agreed that economy and efficiency were elusive words to define. As a purist one would have to answer that the measure of thermal efficiency must be in terms of the therms received in the process, and the therms available for use from the process. There was an ultimate efficiency which went right down the scale to the utilisation of the fuel in the home. They produced certain things for sale, and their economics were dependent on the price they paid and the price they obtained. His only qualification in that respect was expressed in the penultimate paragraph of his paper, in which he emphasised that they were selling not fuel but service.

Long-Term Capital Problems

Mr. **J. H. Dyde** (President-elect) said that the first passage which attracted his attention was that in which Mr. Brown said the goal of high efficiency was a normal directive, but the effect of the cost of obtaining this was a major consideration. They all knew about the rise in the cost of raw materials and of labour over the last 10 years. That rise had been of such a degree as completely to swamp the effect of any increased efficiency of production consequent upon the introduction of the very latest and most modern types of new plant. Even assuming a stable economy over a number of years, he submitted that with gasification and carbonising processes remaining fundamentally of the same type as at present they could not look for more than a fractional point per therm reduction in price. In fact they had not yet as an industry felt the full impact of the new capital charges. It was a fact that if they replaced an existing production unit they had to pay something like three or four times as much as it cost when it was originally put down, and the effect of that on their cost of gas was devastating. It was certain that they could not have enlargement or reconstruction of works without a considerable increase in the cost of gas.

(*Continued on p. 513*)

Continued from p. 510

Fortunately, he hoped, the setting up of larger administrative units in the form of the area Boards would enable capital expenditure to be so allocated and so controlled as to cushion the effect on price increments. Therefore, rather than one or two undertakings finding themselves bound to make reconstructions and to apply very heavy charges to their particular consumers, he hoped that a smaller increment might be spread over the whole of the cost of the gas of a particular area Board.

Prestige

He was interested in Mr. Brown's statement that in the small works the smallest unit of production bore too high a proportion to normal output and an extra bed of retorts had to be put to work to cover, or even to anticipate, a lengthy period when one extra retort only would be sufficient. He had already met with such circumstances in some of the very small works in the Eastern area, and it would seem that there was possibly a case for the introduction of a small producer gas unit, with possibly propane or liquefied gas enrichment. Many of those small units must, from a prestige point of view, be kept going until they were in a position to link them up into the distribution systems from very large production units. It was difficult to lay down hard and fast rules with regard to size, but he would suggest that works between 50 and 75 mill. cu.ft., or even more, might, for the interim period before they were linked up, be best served by the introduction of small automatic water gas units, rather than by resetting or even adding to the small stop-ended retorts which seemed to be so popular, where it was extremely difficult to get the labour to carry out the arduous work and where fuel consumption was obviously too high. He could not see any reason why in such cases, where the works must obviously for some time be subsidised, they could not send out a full supply—right up to 100%—of water gas. In the Eastern area they were thinking on those lines.

On the question of gasholder capital charges, the author had submitted a table which, he said, indicated the advantage of the large production unit in respect of storage charges. Personally he felt gasholder capital charges had nothing to do with the production unit. The whole point was the economics of holder construction in relation to the volume of gas they were storing. If they quoted holder costs in terms per million cu.ft. of gas, a 250,000 cu.ft. holder would cost not less than £92; a 1 mill. holder would cost £58, and the cost per million cu.ft. for a 4 mill. cu.ft. holder came down to £41. It was really a question of holder construction costs.

Flat Rate Price for Coal

One final point was in connection with coal. He had had the opportunity of discussing the matter with his Chairman, Sir John Stephenson, recently, and he had raised an entirely new viewpoint with regard to the cost of coal. He asked why in the gas industry they did not look upon coal from the industry point of view, and not from the point of view of a particular works situated in a particular part of the country. Why, he asked, should they not have a common price for coal to all works, with a variation only in relation to the description or the characteristics of the coal supplied? The principle had been adopted in the case of the steel industry. The steel supplied to a particular engineering works outside Dorman Long was supplied at the same price as steel supplied, for instance, to the shipbuilding yards at Barrow-in-Furness. He asked why the gas industry could not get somewhere near a common price for the coal supplied to all works. It would mean a general balancing of shipping and transport costs, and it would go a long way towards unifying costs of gas.

Mr. **Brown** said it seemed to him that one of the great necessities for research in the near future was to see how they could cut down the cost of steelwork maintenance, and the biggest thing at the gasworks was the holder. It was expensive even to paint a holder. Regarding coal he was not at all sure that he agreed with the suggestion. He did not think it was a good thing to compare coal with steel, because, apart from the very small tonnages of steel compared with coal, coal varied greatly in nature and potentialities, whereas steel was steel, generally speaking. He thought that arrangements might be made to ensure that the most suitable coal went by the shortest route to where it was needed, and that the cleanest coal travelled the furthest distances. Coals available in different types and different quantities should be balanced against the plants which were available to process them. As a long-term policy they should see that the plants of the future were so designed as to treat the coal which would ultimately be available, and that in turn raised the question of research on the production of coal from the new seams which were now being developed.

Mr. D. B. Parkinson (Liaison Engineer, Eastern Gas Board) endorsed what had been said about the smallest economic unit of coal gas plant being taken as 120,000 cu.ft. per day. If they were working three shifts they could work a bench of six stop-ended retorts fairly efficiently. He supported Mr. Dyde in his suggestion that some of the problems of the small works might be overcome by employing either propane enrichment or carburetted water gas. If they were going to use carburetted water gas they must have fairly generous storage, and the ancillary plant would have to be fairly large.

Mr. **Brown** said that while the smallest economic works was of the 300 mill. cu.ft. standard various factors could be brought to bear to bring the figure down to 200 mill., and there were lots of undertakings even below 100 mill. that were working economically, though he could not say to a high efficiency.

Mr. **T. C. Battersby** (Watford) said he had enjoyed Mr. Brown's paper, but he did not quite follow some of the reasoning, more especially with regard to larger holders. The desirable thing would be to have a holder, if not on every consumer's premises, at least at the end of every street, and if they were centralising manufacture they would not necessarily centralise holder storage. The holders should be spread over the district as far as practicable. With regard to integration, if gas had to be supplied on its merits the savings effected by centralised manufacture could very easily be overwhelmed by the additional costs of pumping the gas and transporting the coke. He had taken out some figures in a case where they had been pumping gas over a distance of 14 miles and transporting their coke a similar distance. The additional charges were of the order of 1d. per therm, and for transporting coke over a distance of eight miles they had been spending nearly a halfpenny per therm.

Calorific Value

Another important question arising out of the prospects of greater centralisation was whether they were supplying gas of a sufficiently high calorific value. In America the success of their grid schemes relied to a great extent on the very high calorific value of the gas that was being pumped, and he believed that even in this country probably something of the order of 500 B.Th.U. or more could be justified. We were tending somewhat towards a lower calorific value because in many cases plant manufacturers had designed continuous vertical retorts to produce gas of that standard. He doubted whether suitable coal would be available in sufficient quantities in the future for all the vertical retort plants that were being erected. It was up to gas engineers to see that the manufacturers designed plant to carbonise the types of coal which they had to expect.

He agreed with his Deputy-Chairman that the addition of water gas in some form was the only means of assisting many of the smaller stations in their difficulties. He did not attach so much importance to variations in specific gravity. Many of them during the war sent out gas varying over wide limits. Perhaps they would not like to manufacture town gas regularly over such wide limits, but small variations in specific gravity were of less importance than variations of 2-3 in. in pressures.

Mr. **W. A. Evetts** (Watford) said he assumed Mr. Brown's reference to elasticity ratio to mean the amount of plant to be kept available for production to meet the winter load. Such ratio depended on a definition of what they intended to do, and the amount of coal gas and water gas it was proposed to produce. He agreed with Mr. Battersby that the ideal storage system would be to have a holder at the end of every street. What was wanted was not necessarily a larger holder, but a holder of the right size.

Inefficient Use of Power

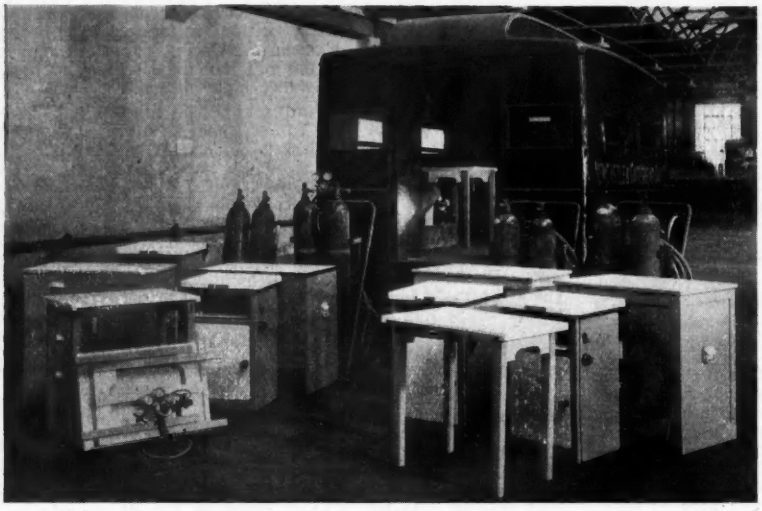
Mr. **E. O. Rose** (Tottenham) suggested that the question of the smallest economic unit must be determined by comparison with the question of alternative supply in bulk from a larger neighbour. If one were 50 miles distant from another works and had to have a gas supply a much smaller unit would be economic. So far in the discussion most people appeared to have been thinking of stop-ended horizontal retorts, and he wondered whether Mr. Brown had considered the use of small intermittent verticals. Quite small intermittents were making high calorific value gas which could be diluted as required. The rich gas could be reduced by steaming or increased by dilution with producer gas, and varying proportions of blue water gas and carburetted water gas. With such plant a much wider ratio than 3 : 4 could be obtained. In the case of smaller units the greatest loss of economy had been in the bad use made of power and the inefficient generation of steam. He had in mind one works in his division which was sending out only 4.8 cwt. of coke per ton of coal. He was sure this could be brought up to 8 or 9 cwt. with proper economy on the works.

Mr. **Brown** said the use of power on the smaller works left room for substantial improvement in efficiency.

Mr. **J. W. Denton** (Torquay) proposed a vote of thanks to Mr. Brown, and Lieut.-Colonel **J. A. Gould** (South Eastern Gas Board), in seconding, welcomed Mr. Brown's remarks about the advantage of having holders placed about the district in situations where the district was developing. In view of town planning he was sure that holder sites would be increasingly difficult to procure in the future. Much of what he had said about the need for proper maintenance on the works applied equally to distribution.

Mr. **Brown** briefly replied.

NEWCASTLE'S HOME SERVICE ON WHEELS



Delivery Van and Complete Equipment.

THE Newcastle-on-Tyne Undertaking has for many years developed the theme of service to, and contact with, its consumers by means of Home Service activities embracing lectures and demonstrations on cookery, laundry and such associated domestic subjects as kitchen planning and interior decoration. These were implemented during the war years by special features such as large-scale housing discussion groups prefaced by lectures by a panel of qualified architects who associated themselves with the work for the purpose of stimulating interest in planning new homes. These facilities were also extended to large groups of H.M. Forces, both men and women, and during the year 1946 the total attendance aggregated 10,000 of widely divergent age groups, and much information was elicited which assisted the undertaking to assess post-war housing equipment requirements. The demand for these services was growing, and in planning to meet the needs of the tenants on the new housing estates it was found that the transport problem was aggravated by the fact that all such housing development was moving away from the towns' centres. It was imperative that the advantages of modern gas consuming equipment be brought home to this ever widening circle of consumers, the vast majority being young people with little or no experience in the use of modern equipment.

To meet all these requirements and to consolidate the cooking load generally, a bold plan for outside lecture demonstrations was evolved which set a target attendance figure of 20,000 as a total for a period of six months. This target meant that with the available staff of four demonstrators an average of some 16 demonstrations per week must be reached with an average attendance of 50 per demonstration.

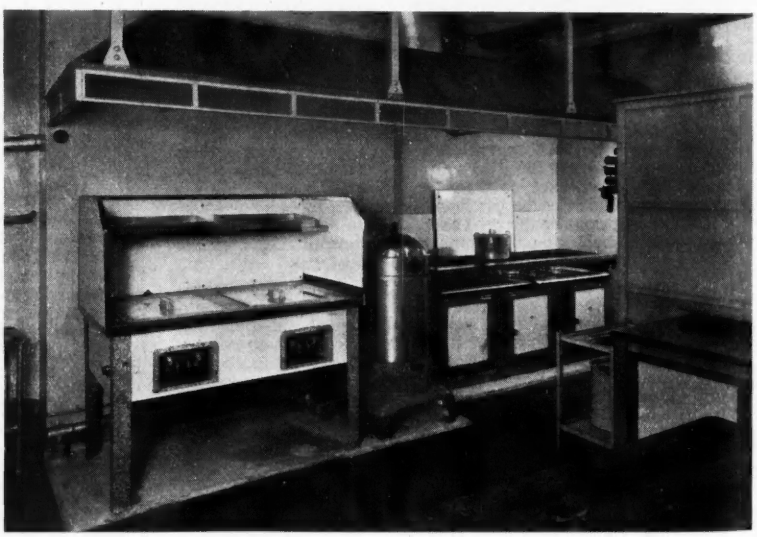
To fulfil such a schedule delivery, connection, assembly and subsequent removal of the demonstration equipment became a matter of precision timing and to ensure this greater flexibility over the older method of connecting up to the nearest gas point in the hall it was decided that the only feasible scheme would be to use a portable supply of gas. To effect this, each demonstrator was equipped with her own demonstration unit which consisted of a truck carrying two cylinders of compressed coal gas, a cooker (with a flexible connection tube to the cylinder set), a specially designed cooking cabinet incorporating a preparation table and a small folding table.

The cylinder truck carried all the necessary pressure reduction gear required to break down from the cylinder pressure of 132 atm. (1,950 lb./sq. in.) to a working pressure of from 4 in. to 6 in. W.G., and was constructed from a standard B.O.C. twin 100 cu.ft. cylinder welding truck. Each of the two cylinders contain 110 cu.ft. of gas.

The equipment is carried on a converted coin collection van, which is capable of taking three complete sets, together with six cylinders which, owing to their weight of about 120 lb. each, are carried on wooden frames suitably shaped to prevent the movement of the cylinders during transport. Tests have shown that two cylinders will easily supply gas for three average cookery demonstrations, and to eliminate any risk of error a system of coloured plastic tallies is employed to denote clearly the cylinder gas content. This scheme has been in operation since Sept. 1, 1948. Following a successful Christmas Party demonstration for Newcastle Corporation tenants which was reported by a B.B.C. Observer in 'News from the North,' a similar function was held for the South Shields Local Authority. This attracted an audience of 450 and had the patronage of the Mayor, Mayoress, the Chairman and members of of the Housing Committee. Quite apart from the value of this feature, in providing instruction in use of unfamiliar appliances to the young housewives, it further assisted them in the planning and preparation of menus. Equally as important was the consolidation of friendly relations between the Council and the Gas Undertaking.

The converted coin-van described is being modestly equipped with domestic appliances and will serve as a domestic equipment advisory bureau.

WELFARE SERVICE IN EAST MIDLANDS



One hundred and fifty mid-day meals and 200 teas or light refreshments are provided daily from the new canteen kitchen recently completed at the Commercial Street headquarters of the Sheffield and Rotherham Division of the East Midlands Gas Board. The layout was prepared by Miss A. E. Clark, Superintendent of the catering services, in co-operation with Messrs. R. & A. Main, Ltd., of Falkirk, who also supplied most of the equipment, including canopy and a special ventilating system, complete with extractor fan. The new installation includes: Treble gas oven range in mottled enamel finish; double pan fish fryer in mottled enamel finish; hot cupboards; gas hotplate; gas rotapan; L.1000 gas refrigerator; tea and coffee urns; and a Stott 'Senior' No. 2 boiler.

PUBLICATIONS RECEIVED

The North Thames Gas Board has published an illustrated booklet, *Chemical Products*, which was written and designed especially for the recent British Industries Fair. The purpose of the brochure is to introduce the chemical products manufactured by the Board, all of which are derived from by-products of the carbonisation of coal in gas retorts and coke ovens. It is pointed out that the Board can control every process from the production of the raw material to the sale and delivery of the refined product by means of its own products works at Beckton and Southall. Some indication of the vast scope of the Board's activities is given by the following summary of quantities of crude by-products treated annually by the two works:

(1) Crude tar—215,000 tons (42 mill. gal.).
(2) Crude benzole—9 mill. gal.
(3) Ammoniacal liquor—105 mill. gal. (10,200 tons 100% ammonia).
(4) Spent oxide—13,500 tons.

The Beckton Products Works, which covers an area of 92 acres, and employs over 1,000 people, has continually improved and extended its range of products during its 70 years' history as part of the Gas Light and Coke Company. This progressive outlook, it is stated, is being continued by the North Thames Gas Board, and the systematic reconstruction of the Works around existing modern units has already begun 'to provide for orderly future development in relation to the expected expansion in gas production.' The Board confidently expects to produce much greater quantities of crude by-products, while maintaining the Beckton tradition of quality and service.

* * *

The realisation that the direct use of coal as a combustible fuel is a wasteful procedure has led to an increasingly intensified study of the principles and practise of gas separation. A useful contribution in this field for graduate students and technologists has been made by Dr. Mansel Davies in his book, *The Physical Principles of Gas Liquefaction and Low Temperature Rectification*, published by Longmans, price 25s. Dr. Davies outlines from first principles the major factors involved in gas liquefaction and the fractional distillation of liquefied gases. He describes the processes in industrial use at the present time, which aim at both the extraction of chemically valuable gases from any source of industrial significance, and at the most effective use of coal and petroleum by means of treatments which produce maximum fuel value and the isolation of chemically valuable constituents. The book includes chapters on simple cooling practices, air liquefaction in high pressure circuits, the analysis of cooling processes, the mechanics of isentropic expansion, the practice of air rectification, and the theoretical analysis of the rectification process.

* * *

The Economic Unit of the Treasury has published a booklet, *Industrial Building*, containing advice and information for industrialists wishing to extend their premises, or to build new accommodation. Its object is to remove the obscurity which has surrounded the process of obtaining the necessary consents for such building work. The booklet outlines the controls on industrial building and the ways in which the industrialist can enlist the help of Government departments in acquiring the necessary permission to build. Two appendices are included which give lists of industries classified under the Government departments which sponsor them, and the regional officers of each department, with addresses and telephone numbers. The publication is free of charge from any regional office of the Ministry of Works, the Ministry of Supply, or the Board of Trade.

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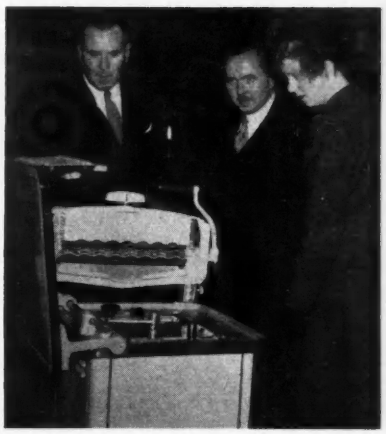

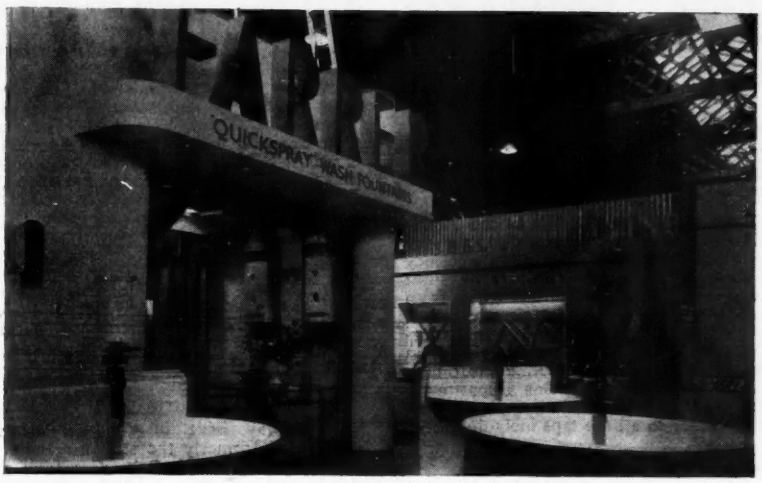

Further Views at the B.I.F.

Above: *On the occasion of his visit to Castle Bromwich, Mr. Harold Wilson, President of the Board of Trade, examined a Morley washing machine at the stand of Morley Products (Padiham), Ltd.*

Left: *One of the total of 85 Ascot Water Heater exhibits. Ascot appliances predominated in all the bars, toilets, restaurants, and various exhibitors' stands. The photograph depicts an installation of the Ascot multipoint water heater on the stand of William E. Farrer, Ltd., Birmingham.*

Below: *During her inspection of the Fair, Her Royal Highness Princess Elizabeth visited John Harper's stand. The Princess is shown with Mr. Griffiths, a Director of John Harper & Co., Ltd., who demonstrated to her details of the No. 3177 gas griller.*

SCHOOL MEALS AT ST. HELENS

The cook-in-charge in the newly-equipped kitchen prepares the midday meal. The vegetable boiler is shown on the right (above).

A corner of the kitchen, showing the double-oven range, conveniently placed for light and ventilation.

New accommodation for school feeding which has been provided at the Sutton St. Joseph Infants' School at St. Helens is an example of how school meals can be given in surroundings attractive to the children and with maximum efficiency by the staff. A newly-built kitchen dining-room is comfortably heated by Bratt Colbran overhead heaters and enables the children to have their meals away from the familiar surroundings of desks and blackboards. Some 104 meals are served daily and the number is still increasing; breakfast can also be obtained—an important consideration in an industrial district where many mothers are employed in factories. Gas is used throughout, for cooking, hot water, and heating the dining room. Radiation appliances were installed by the St. Helens Gas Department, consisting of a Chester double-oven range, a Lune vegetable boiler, and a 25 gal. Equator storage water heater, which supplies hot water to all the taps including those in the cloakroom.

PUBLICATIONS RECEIVED

(*Continued from p. 517*)

The Australian Gas Institute Transactions for 1947, recently to hand, show that a high standard of technical discussion was maintained throughout the year. Standardisation, education of engineers, technical progress, gas legislation, were some of the subjects of papers presented at the annual and sectional meetings of the Institute.

* * *

The British Standards Institution has published B.S. 1547 for flameproof industrial clothing. The clothing covered by this standard is not fireproof clothing intended to resist prolonged contact with flame, but clothing made of fabrics treated with soluble deposits which increase the resistance of the fabric to fire, so that it is incapable of propagating flame.

The standard is based on the expected use in most industrial processes which require flame protection of textile materials, usually cotton, flameproofed by the deposit of soluble salts. Typical processes are welding, forging, annealing and those in which combustible materials are handled. A method of test and requirements for materials flameproofed in this way are included, and requirements are given for the effect of flameproofing treatment on the strength of the material. Details are provided of the marking of flameproofed material, freedom from injurious substances, design and maintenance of clothing.

Copies of this standard can be obtained from the British Standards Institution, Sales Department, 28, Victoria Street, London, S.W.1, at a cost of 2s., post free.

The National Federation of Gas Coke Associations has issued an abridged edition of the Approved Coke-Burning Appliances Handbook, which was recently revised and re-issued. It is published in loose-leaf form and contains sections mainly on domestic appliances, including open fires and convector fires, domestic boilers, small central heating and hot water boilers, and heating stoves. Each section has a general introduction dealing with correct methods of installation, fully illustrated, and technical fuel data. The handbook, in this new, portable form, should be of great assistance to architects, builders, heating engineers, and local authority officials concerned with housing. Although designed to burn coke or other smokeless fuels, the appliances comply with the wishes of the Ministry of Fuel and Power in being designed to give maximum efficiency when burning all types of domestic solid fuels. The abridged handbook is available from the Federation, 1, Grosvenor Place, London, S.W.1, price £2 2s.

* * *

Broom and Wade, Ltd., High Wycombe, give details of a new air-operated oil-priming pump in the March-April issue of their *News Bulletin*. The pump has been evolved for priming the hydraulic system on the five larger sizes (HPS6 to HPS25RA) of the 'Broomwade' hydropneumatic squeeze riveters, and overcomes the disadvantages of the manually operated oil gun which has been used hitherto. The bulletin also includes descriptions of metal-spraying equipment, the 'Cehak' fire-fighting pump for ships, and a filter and separator (No. 246) for removing impurities from compressed air lines.

The report of the Chemistry Research Board describes the main fields of activity at the laboratory together with its further reorganisation and re-equipment. The consolidation of research into corrosion, inorganic, organic and high polymer divisions has been completed and a Radiochemical Section to carry out work on behalf of the Department of Atomic Energy, Ministry of Supply, has been set up. A great increase in liaison with the British chemical and allied industries has occurred and in 1947, a successful series of 'Open Days,' was held to coincide with the Centenary Celebrations of the Chemical Society and the International Congress of Pure and Allied Chemistry in London. The Report of the Board announces the formation of a Pure Metals Committee under the chairmanship of Dr. C. J. Smithells. This is concerned with the preparation of pure metals for research and development purposes in the United Kingdom.

* * *

A history of the Wandsworth Gas Company has been published as a special supplement to the 'Wandgas Magazine.' Appropriately called '*From an Acorn, the Tree,*' it tells the story of the undertaking from the time of its formation in 1834. Illustrations have been used to mark the major technical developments in the Company's progress, and a special section is given to the evolution of the Company's fleet of colliers. Brief histories are provided of the subsidiary companies amalgamated with the Wandsworth undertaking and short statistics of current production and activities conclude a comprehensive review.

* * *

The May issue of the *Co-Partners' Magazine*, formerly the staff magazine of the Gas Light and Coke Company for whom it has been published continuously since 1911, appears under the name of the North Thames Gas Board. It is stated editorially that the magazine will continue until the final form of a staff magazine for the Board has been decided, and a welcome is extended to the many new readers throughout the area. In addition to domestic news which related to the former Gas Light and Coke Company, 16 pages are devoted to an attractive description of the area of the North Thames Gas Board and its constituent undertakings. The magazine is attractively produced and is of a high technical standard.

* * *

We have received the Spring Number of *Smokeless Air*, the Journal of the National Smoke Abatement Society. It contains a number of interesting articles including a description of Rochdale's smokeless zone, planned for 1953. The zone will consist of 67½ acres and has some 320 premises of varied purpose. The definition of smoke is interesting, if not amusing—'soot, ash, grit, and gritty particles, but shall not include smoke emitted when coke, anthracite or any other fuel specified by the Corporation is used in a furnace, stove, or other appliance which is suitable for burning such fuel and is properly maintained and used.'

* * *

Chemistry Research, 1947, published for the D.S.I.R. by H.M. Stationery Office, price 2s. (70 cents U.S.A.), by post 2s. 2d., gives details of Government research at the Chemical Research Laboratory during the year.

(*Continued on p. 521*)

PUBLICATIONS RECEIVED

(*Continued from p. 518*)

We have received from the Innoxa Laboratories, Balls Pond Road, London, N.1, a brochure on *Occupational Dermatitis* which describes the causes and control of this disease for the benefit of the medical officer and those responsible for the health of the industrial worker. Prophylactic measures which can be taken are given under three headings—selection of operatives for particular processes, inspection of employees at work, and protection of the skin from irritant materials. The latter part of the brochure examines the rôle of barrier creams, which have been developed at the laboratories. Eleven creams are available which afford protection against specific risks of irritation from a wide range of substances, including paints, enamels, tar, creosote, dope, thinners, solvents, acids, alkalis and other materials soluble in water. A hazard chart listing 350 irritant substances is also included.

* * *

The Watford and St. Albans Gas Company has taken the opportunity to make the April issue of its magazine, the *Co-Partner*, a souvenir number, which, in addition to the customary reports of the Company's activities, contains a number of articles on the progress of the Company over more than a century. An introductory message by the Chairman, Mr. F. H. Jones, is followed by an illustrated history of the Company, supported by short records of the development of individual districts. Changes in the technique of production at Watford are described, and information is given of the rapid development of the Industrial Department since its inception in 1936.

GAS UNDERTAKINGS' RESULTS

Imperial Continental Gas Association

The Board of the Imperial Continental Gas Association have resolved that for the year ended Mar. 31, 1949, subject to the approval of the proprietors and the verification of the accounts by the auditors, an ordinary dividend of 7½% and a special dividend of ½%, both less income tax, making a total of 8% (actual), less income tax at 9s. in the £, be paid on the £5,600,000 capital stock on July 9, 1949, to proprietors registered in the books at the closing of the capital stock transfer books on June 17, 1949. The net profits shown in the accounts for the year ended Mar. 31, 1949, after providing for taxation, amount to £246,635. Of that sum £231,921 represents profits attributable to the year 1948/49 and £14,714 to previous years. The proposed dividends, less income tax, require £246,400, leaving a balance of £235 to be added to the carry-forward. The net profits for the preceding year amounted to £269,050. Of that sum £231,013 represented profits attributable to 1947/48 and £38,037 to previous years. An ordinary dividend of 7½% and a special dividend 1½% were paid, requiring £269,500, necessitating a withdrawal from the carry-forward of £450.

COMPANY NEWS

Drakes, Ltd.

The 47th annual report and accounts for the year ended Dec. 31 show a trading profit of £57,108, compared with £49,798 for the previous year. From a total available balance of £53,894 a sum of £20,000 is transferred to general reserve (revenue), provision is made for preference dividend at standard rate and for maintenance of buildings, and an Ordinary dividend is paid at 10%, less tax, leaving £25,649 to be carried forward against £25,833 brought in from 1947. The Chairman, Mr. J. A. Drake, in his statement to the shareholders, reports that the order book is full for this year and the majority of 1950, and the Directors are confident that under the nationalised industry there will be a large amount of orders placed for future delivery.

TRADE NEWS

Griffin and Tatlock, Ltd., describe in Booklet GT.1370 three noteworthy new items, which they have shown at the B.I.F., namely: Dixon Gauze Rings, G. & T. High Efficiency Fractionating Columns, and the G. & T. Heavy Element Tube Furnace. The gauze rings are a random packing for laboratory scale fractionating columns. They are of high efficiency and completely seal the apertures of the gauze with the reflux liquid. A completely wetted surface is maintained throughout the process and there is no sign of channelling or drip. The G. & T. heavy-element tube furnace can be run continuously at 1,150°C. and for short periods at 1,200°C. The temperature can be attained within 20 min. of switching on. The furnace is of improved modern design with efficient lagging and the outer casing is tolerable to the hand.

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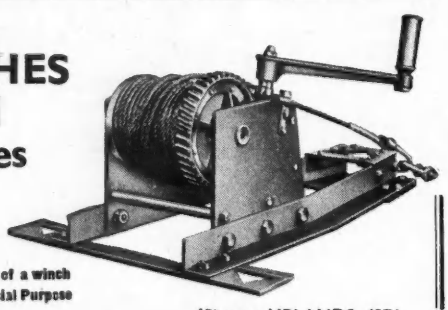

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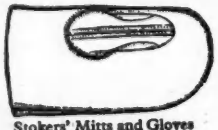

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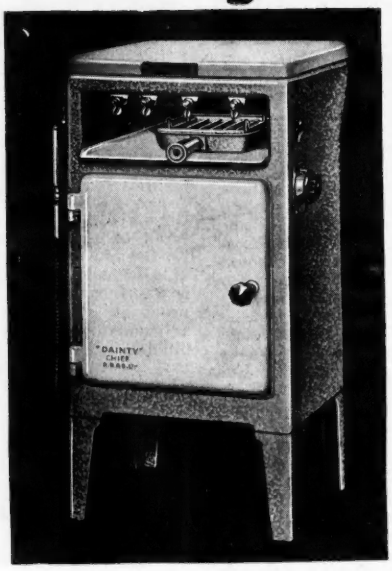

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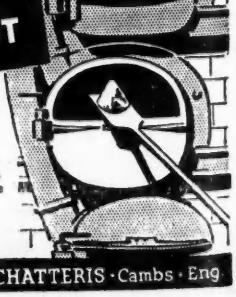

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